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10/569,014	02/21/2006	Hiroshi Fukukita	108731866USWO	1735
53148	7590	04/22/2009	EXAMINER	
HAMRE, SCHUMANN, MUELLER & LARSON P.C. P.O. BOX 2902-0902 MINNEAPOLIS, MN 55402			MEHTA, PARIKHA SOLANKI	
ART UNIT	PAPER NUMBER			
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/569,014	FUKUKITA, HIROSHI	
	<b>Examiner</b>	<b>Art Unit</b>	
	PARIKHA S. MEHTA	3737	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 17 December 2008.  
 2a) This action is FINAL.                    2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1,2 and 4-7 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) Claim(s) \_\_\_\_\_ is/are allowed.  
 6) Claim(s) 1,2 and 4-7 is/are rejected.  
 7) Claim(s) \_\_\_\_\_ is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
     1. Certified copies of the priority documents have been received.  
     2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
     3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ .                                    |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____.   | 6) <input type="checkbox"/> Other: _____ .                        |

**DETAILED ACTION**

***Specification***

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the **novel** feature(s) of the invention to which the claims are directed.

***Claim Objections***

2. Claims 1, 2 and 4-7 are objected to because of the following informalities:  
In claims 1, 4, 6 and 7, “for subjecting” should be replaced with --configured to subject--.  
In line 9 of claim 1, it is unclear what is being set forth by “followed by adding”.  
In line 3 of claim 1 and line 2 of claim 5, it is unclear what is being set forth by "composed of".  
In line 2 of claim 2, “capable of switching” should be replaced with –configured to switch--.  
In claim 4, it is unclear what is being set forth by “provided inside”.

Claims 1, 2 and 4-7 recite improper means plus function language. Applicant is respectfully reminded that, in order to properly invoke 35 U.S.C. 112, 6th paragraph, a claim must meet the following three requirements, the claim must recite the phrase “means for” or “step for”. Accordingly, any recitation of merely “electroacoustic means” and “parallel adding means”, for example, is not considered a proper means plus function recitation. Applicant is advised that these are not the only two instances of deficient recitations in the claims, and Applicant should amend all such recitations accordingly.

Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:  
The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
4. Claims 1, 4, 6 and 7 are rejected under 35 U.S.C. 112, second paragraph, as failing to set forth the subject matter which applicant(s) regard as their invention.  
Claims 1, 4, 6 and 7 recite “the sub-array basis” without sufficient antecedent basis for the term.

Claims 1, 4, 6 and 7 also recite "the sub-array" without clear antecedent basis; the claims set forth multiple sub-arrays, and as such it is unclear which sub-array "the sub-array" refers to. Similarly, claims 1, 4, 6 and 7 recite "the electroacoustic transducer" without clear antecedent basis.

Claims 6 and 7 recite the delay means/phase shifter as "delaying" or imparting a phase shift amount "to either one of an output signal of the first main beam former and an output signal of the second min beam former", followed by a recitation of "an output signal of the second main beam former, to which the delay time difference is imparted by the delay means". Similarly, claim 7 recites the phase shift means as "imparting a phase shift amount to either one of an output signal of the first main beamformer and an output signal of the second main beamformer" followed by a recitation of "an output signal of the second main beam former, to which the phase difference of 90 degrees is imparted by the phase shift means". Recitation of delaying either one of the first and second signals constitutes a broad limitation, and recitation of delaying the second signal constitutes a narrow limitation. A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. See MPEP § 2173.05(c). Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949).

In view of the indefiniteness of claims 6 and 7, they cannot be further examined herein in view of the prior art.

#### ***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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6. Claims 1 and 2 are rejected under 35 U.S.C. 102(b) as being anticipated by Savord (US Patent No. 6,013,032), hereinafter Savord ('032), of record.

Savord ('032) discloses an ultrasonic system comprising electroacoustic conversion means, a sub-beamformer that generates signal having different polarities with respect to a received signal from one of the electroacoustic transducers, obtains first and second signals by controlling amplitudes of the signals having different polarities, imparts a delay time to only one of the signals (note that phase shifting one signal by zero is considered to constitute not imparting a delay time to that signal), and adds the first and second signals, as well as a main beamformer (col. 7 line 42 - col. 8 line 42). By disclosing a phase difference of 90 degrees (col. 8 lines 22-24), Savord ('032) imparts a delay time difference corresponding to a quarter of one period of the received signal to the first and second signals. The programmable phase shifters of Savord ('032) (col. 8 lines 40-42) would be capable of switching the delay time difference between a quarter of one period of the fundamental of the received signal and a quarter of one period of a harmonic of the received signal.

7. Claims 4 and 5 are rejected under 35 U.S.C. 102(b) as being anticipated by Applicant's admitted prior art.

At pages 1 and 2 of the present disclosure, Applicant admits that it is known in the art to create an ultrasonic system comprising vibrators ("a plurality of sub-arrays composed of two-dimensionally arranged electroacoustic transducers"), a sub-beamformer that generates signals with respect to a received signal from one of the electroacoustic transducers in one of the sub-arrays, obtains first and second signals by controlling amplitudes of the signals having different polarities, imparts a predetermined phase shift to one of the first and second signals by a two-stage phase shift circuit wherein each stage has a phase shift amount of 45 degrees, and adds the first and second signals, as well as a main beamformer that adds a delay to the output of the sub-beamformer.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PARIKHA S. MEHTA whose telephone number is (571)272-3248. The examiner can normally be reached on M-F, 8 - 4:30pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Casler can be reached on 571.272.4956. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/BRIAN CASLER/

Supervisory Patent Examiner, Art Unit

3737

/Parikha S Mehta/

Examiner, Art Unit 3737